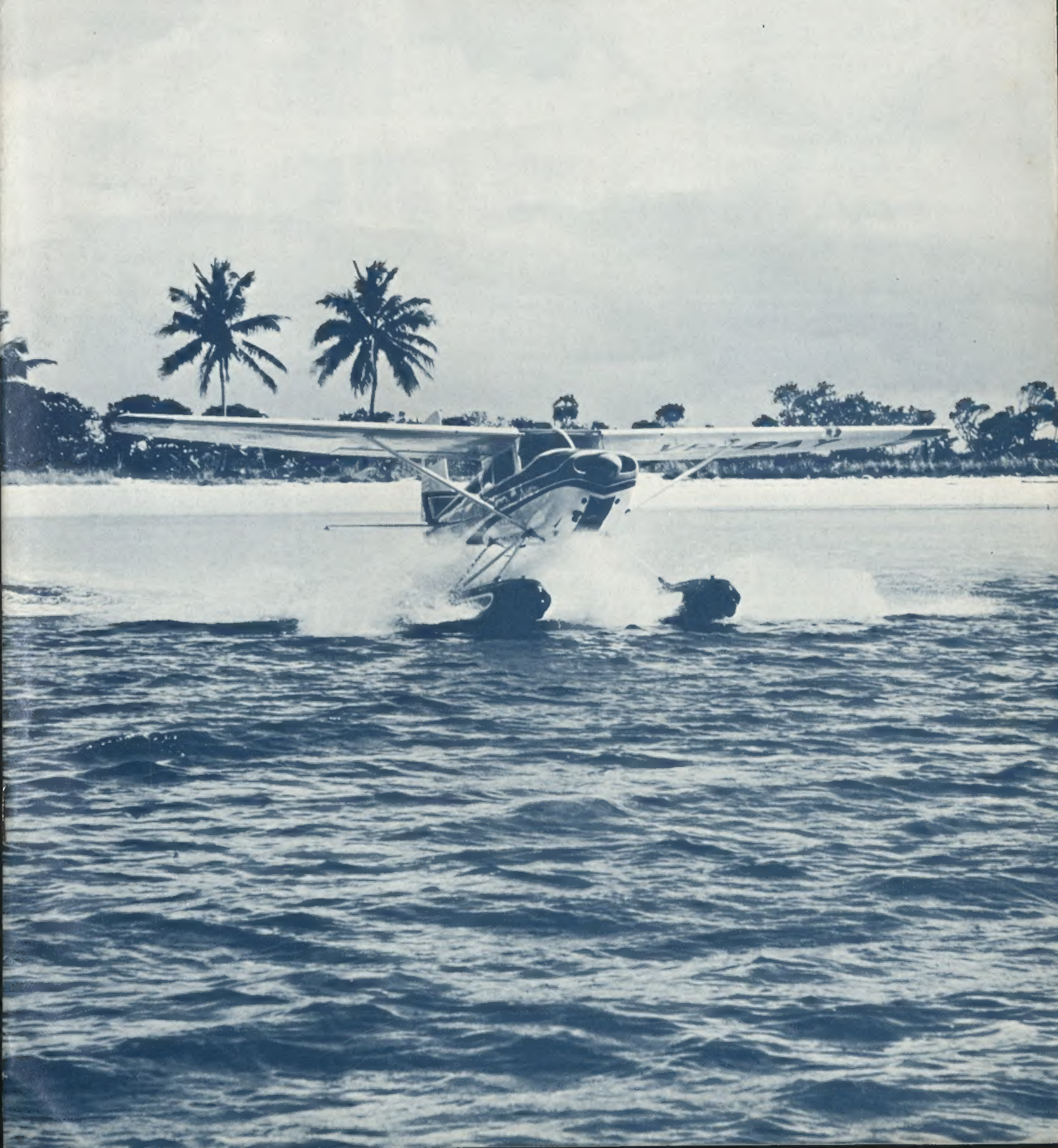
FAA AVIATION NEWS

AUGUST 1969



COVER

Flying floats can be half the fun of going on a vacation. Happy landings and a safe return call for circumspection at the helm. See page 8.

FAA AVIATION NEWS

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"... if the present rates of growth in aviation are to continue, the airport/airway **dialogue** has to be supplanted by airway/airport **development.**"

John A. Volpe,
Secretary of Transportation

AVIATION'S HOUR OF CRISIS

The airport/airways bill now before Congress could be the most important piece of legislation in the history of civil aviation. If enacted it promises to deliver the nation from an 11th hour crisis that affects every pilot and every facet of air travel in the United States.

The crisis can be defined in a few words: the growth of aviation facilities in this country is no longer able to keep up with the demand for air services. At some major airports restrictions have had to be placed on the number of operations, both IFR and VFR. At the other end of the scale, many small airports are underused because runways or NAVAIDs are inadequate for the more sophisticated aircraft now in service.

The crisis is not concerned with aviation alone, but with the economic development of the entire nation. Air transportation is no longer an adjunct to the commercial flow of people and goods; it is now a mature and vital part of our economy. No locality can afford not to be linked into the national airspace system, for the circulation of many key products as well as large segments of the population depend upon it.

Nevertheless, many communities are now without the kind of aviation facilities that make possible regular air service or business aircraft activity, and their prospects of being linked up with air transportation are bleak indeed unless a long range program is undertaken immediately to plan and finance the expansion of air facilities—new and better airports, more NAVAIDs and continued development of the air traffic system.

Secretary of Transportation John A. Volpe has pointed out that there have been more meetings and discussions inside and outside of government in the last three years devoted to the question of defining the airport/airway problem and trying to decide what to do about it than have been devoted to any other transportation issue. While the talk has been increasing, so has the magnitude of the problem.

At five high density airports, it has become necessary to impose limitations on the number of hourly flights, and to require advance reservations for all aircraft. In some cases it is necessary to divert general aviation aircraft to alternative airports.

The demand for service on the part of general aviation is rising at an unprecedented scale. Some 300 new units are coming off the production line every *week*. The number of new airports coming into existence each *year* is pitifully small. Everyone concerned agrees on the need for new airports and new NAVAIDs to service them, but agreement on the means of providing them seemingly involves endless debate.

Secretary Volpe has stated bluntly that if the present rates of growth in aviation are to continue, the airport/airway *dialogue* has to be supplanted by airport/airway *development*. The question of which comes first in the order of need—airports or airways—is resolved in the legislative bill now before Congress which creates a designated fund to help finance both aspects of the national airspace system and assure the nation of a balanced system.

OBJECTIVES OF THE BILL

To solve the problem of air traffic delays, to avoid intolerable restrictions on air travel, and to keep our skies safely open to all . . . we must immediately embark on a ten year program to:

	10 year cost (billions)
(1) Build 900 new airports and improve 2,750 others (matching grants)	$ 2.5
(2) Expand and modernize air traffic facilities	2.5
(3) Undertake research and development for the future	0.6
(4) Maintain and fully man the existing air traffic system	8.9
	$14.5

Two thirds of this cost to be derived directly from users of the airport/airway system:

(1) Domestic passenger tax, 8% (raised from 5%)	7.37 (billions)
(2) International passenger departure tax, $3 per person	.40
(3) Airfreight waybills, 5%	.62
(4) General aviation fuel, 9 ct. gal. tax (raised from 2 cts.)	.75
	$ 9.14
From general revenues	$ 5.36

Since both airports and air traffic facilities are extremely costly to plan, build and maintain, it makes good sense to plan them in concert. Starting from scratch, it takes about three years to put an airport into operation. It also takes about three years to train a fully qualified air traffic controller. And it takes about the same length of time to design, construct and install major NAVAIDs, such as control towers or instrument landing systems.

An investment in land and concrete to lengthen runways at an airport will only produce the anticipated return if the associated NAVAIDs are capable of handling the desired traffic in all types of weather. Similarly, modern electronic equipment installed at an airport which is not able to expand its runways to accommodate the higher performance aircraft now in common use would be an obvious waste of funds.

The crisis that lies before us is one of both feast and famine. The feast is occurring in the major hubs, where more aircraft and more people want to travel by air than can be accommodated without excessive delays. The famine is occurring in the smaller communities, where people want to travel by air for pleasure and business, but are grounded by lack of adequate airports. The feast is also apparent in the rising production of aircraft of all types, and the incredible growth in the number of air travelers and qualified airmen. And the famine is again apparent in underused airports where lack of modern air traffic facilities restricts the desired air service.

Resolving these opposites is the objective of the "Aviation Facilities Expansion Act of 1969," which takes official recognition of the fact that aviation is no longer a budding industry, but is fully matured and capable of shaping its own future. This issue to be decided now is how strongly we believe in that future. ■

"can i spin that little knob, daddy?"

Letting a small child fly "co-pilot" is asking for trouble.

Flying with the family is fun. In summer the sky is full of small aircraft carrying families to vacation spots. The rear seats may be occupied by all types of newcomers to general aviation—uncles, aunts, cousins, as well as dogs, chimps or canaries—but especially children. As long as you have room, the more the merrier. But if you have ever pulled a car off the road to swat a couple of kids squabbling in the back seat, you can anticipate how important it is to prevent yourself from being dangerously annoyed by beast or toddler at 5,000 feet.

Flying is not ordinarily hard on children or pets, and some are soon fond of it, but the first trip may provoke all manner of acute reactions.

The family pilot should try to have a second adult along to attend to any problems that might come up. Your own wife would make an excellent cabin attendant.

The time to start preparing the family entourage for the flight is long before you ever get to the airport. To avoid arguments at takeoff time, or worse still, in the air, decide beforehand where in the plane each child is to sit. Arguments at takeoff time disrupt one's routine and may result in your forgetting to check the magnetos or set the fuel mixture correctly.

Above—the right seat is a place for a responsible adult, like your wife, who can assist with checklist and inflight problems. It may be fun to have a "sweet young thing" up front **(below)** but while you are flying the plane she may be taking things into her own hands.

Except for infants in arms, you need a seat with a seatbelt for each child. Several youngsters confined under one restraining belt can become troublesome much more quickly than if each is allowed his own territory. For small children, an extra cushion set on top of the aircraft seat is useful. It permits the child to see out the window and at the same time relieves adults from trying to hold the squirmer on their laps—a dangerous practice, especially in the front seat where the child can obstruct the pilot's vision and interfere with movement of the controls.

Sitting still for an hour or more is a hardship to many children. Make sure the child is comfortable—that he is neither too hot nor too cold, and is wearing sunglasses to protect him from the glare. Insist that he visit the restroom before departure—whether he wants to or not. Try to prevent him from eating heavily or drinking carbonated beverages for about two hours before flight time. (Air bubbles expand at altitude and may cause discomfort.)

Prevent Boredom

Boredom is a frequent cause of discontent aboard the aircraft. Encourage young passengers to take a favorite toy—a doll or picture book that will keep their interest for a long period of time. When interest in the toy dwindles, explain how the trip is progressing and point out towns, rivers and other interesting sights as you fly over them. Older children can be given the duty of looking out for other airplanes.

A frightening experience in a plane can make your child forever reluctant to fly. Make sure he understands that a plane, like a car on a bumpy road, will bounce around a little. When it happens, he won't be surprised. And most important, don't choose this time to practice stalls and steep turns.

If you anticipate bad weather, all passengers may take a couple of anti-nauseant tablets half an hour before the trip. Two such compounds presently available without prescription are Dramamine and Marezine.

Smoking in a confined area such as an aircraft cabin can irritate tiny nostrils and upset children's stomachs. It should be avoided.

If you have a pet of reasonable size who

Flying with the family is fun, but a safe enjoyable trip may require leaving a canine member behind, even if this means a tearful moment at the departure gate. An airsick St. Bernard in a small plane is no laughing matter.

can't conveniently be left behind, bring him along too, but remember, he is subject to the same problems in flight as your children—fear, excitement, airsickness, and boredom. It is a good idea to confine pet animals in some kind of cage to prevent them from becoming excited and jumping around inside the aircraft—especially if they are not accustomed to traveling. If this seems inhumane to you, and you have a large cabin, try restraining him with four tethers fastened loosely around his neck, and secured to the cabin walls.

To help protect your pet from motion sickness, it is best not to feed him before the trip, but to wait until about 45 minutes after it is over, and his nerves are calm. Tranquilizers and anti-nauseant drugs are available for animals but *should only be administered under the direction of a veterinarian.*

For the comfort of pets and children alike, try to break your trip into two-hour segments, allowing time to stretch, relax and move about between legs of the journey. This also prevents a frantic search for a place to make an unscheduled restroom stop.

Sometimes even after extensive precautions are taken to prevent it, your child or pet will become airsick. Although this is an infrequent occurrence, you should be prepared for it by carrying sick bags and plenty of tissues on board. A can of aerosol detergent spray can help make the cabin more pleasant after such an incident, at least until you can land and do a better job.

Be sure to stress to children that pulling or pushing any knobs or control wheels is forbidden. However, don't count on their obeying you—especially if your children are young or if they regard your instructions as a challenge. Once the flight is in progress, *no young hands or paws* should be allowed within reach of the control panel. As a precaution, *visually check* trim tab settings and other controls in reach of back benchers. Especially watch fuel selector handles.

If your child is sick—especially if he has a cold or other respiratory problem—leave him home. Changes in altitude can aggrevate his condition with uncomfortable ear effects lasting several weeks.

Alleviate Discomfort

Children who have been told about the physiological changes that take place at altitude are less uneasy when they feel pressure in their ears. Explain to your child that he can relieve the discomfort of unequal pressure in his ears by holding his nostrils together, closing his mouth, and trying to force air through his nose.

If the excitement of the trip has proved too much for your child and he begins to hyperventilate, your "cabin attendant" can let him breath into a paper bag for a minute or so. Air with a higher carbon dioxide content should calm him down quickly.

The rule of never allowing passengers to alight or board until all propellers have stopped turning applies even more vigorously to children. On the airfield, it is a good idea never to let a small child's hand out of yours. Even some adults don't realize the danger of being near a propeller blade, and little people are especially difficult for a taxiing pilot to see.

Getting in and out of airplanes can be quite a chore for someone who can't reach very high. A helping hand may prevent a damaging (to child or plane) misstep.

Think you are all set? Don't count on it. Children and animals have a knack of coming up with the unexpected and both can be a real menace around machines.

Never leave your child alone in a plane—no matter how briefly. Children are great imitators. If your lad is observant, he probably already has figured out how to start the engine. Incidents have occurred where a child left unattended, has managed to taxi an aircraft, and it has roared off out of control, mashing wings and tail sections of several others parked nearby. Other youngsters, with no prior experience in flying or landing an airplane, have managed to take off, with dire consequences.

The pilot who carries a small child as a passenger in the rear seat of a two-seater tandem may be inviting trouble. If the little fellow occupies the rear seat of a tandem, he will be virtually out of sight of the pilot. He could easily become frightened and hysterical, if the weather is bumpy. Or he could slip out of his seat and manage to jam up the rudder controls.

Carrying a child-passenger in the front seat of a small plane can also make life difficult for the pilot. The natural instinct of the child to imitate the movements of others may lead him, without the pilot's knowledge, to rearrange the trim tab, fuel mixture or throttle controls. The minimum age for allowing a child to occupy a front seat is a matter of judgement, and considerable care must be given to sub-teenagers.

Probably the best general rule for flying with unpredictable passengers, such as children or pets, is to avoid over extending yourself. Keep your hops short, keep out of bad weather or critical flying conditions and land before nightfall. Then, if a grubby little fist presents you with a piece of avionic equipment wrenched from the panel and asks, "What's that?" you will not gasp and turn pale. Flying with the family can be fun, if you play it safe.

Nancy Koplinka

Hector's hot breath on the back of your neck could teach you to hate pets, children and flying. Don't risk it.

Trapezoids and Tarmac

A Geometric Aid to Landing Techniques

PERSPECTIVES VI

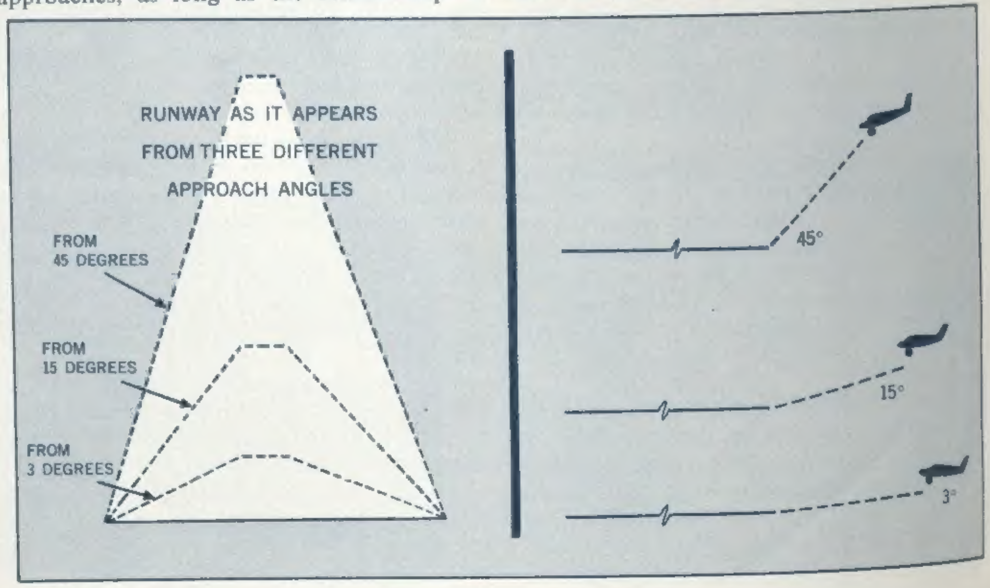
Maintaining the proper approach angle is one of the keys to safe and happy landings. The proficient pilot must learn to read the aspect of the runway before him and depend on his vision as well as his cockpit instruments.

An elongated object, such as a runway, appears to change its shape as the point of view of the observer changes. For example, a runway seen from directly overhead will appear to be of equal width at either end. The same runway, seen from the cockpit of an airplane making an approach from several miles out, will appear wider at the threshold than at the opposite end. This phenomenon, known to artists as foreshortening, may be used to assist pilots in holding to a desired glide angle.

The pilot who is familiar with foreshortening will know that if he is holding to a constant approach angle, such as three degrees, the apparent configuration of the runway which he sees will remain constant. He will see the runway as a trapezoid, a four-sided figure with two parallel sides of unequal length, and two equal sides in convergence.

If he steepens his approach angle, the trapezoid shape will alter, with the runway apparently growing longer and narrower. If he shallows his glide, the runway configuration will apparently grow shorter and wider.

Although the area of the runway will in any case steadily grow larger as the aircraft approaches, as long as the relationship of the sides in the trapezoid remain the same, the pilot knows that his glide angle has not changed. If the runway is not fairly level, however, there may be distortions. ∎



WORTHY TO FLY

Authorized Inspectors insure quality control on general aviation maintenance

RARE indeed is the pilot who is not convinced that (a) he is a pretty fair aircraft mechanic himself and should be allowed to do far more work on his own plane, and (b) that annual inspections come too soon and too costly.

Actually, there is quite a bit of maintenance a pilot can perform on his own aircraft. He can do all of the *preventive* work outlined in FAR 43, Appendix A, with no supervision whatever, on any aircraft he owns or operates that is not used in air carrier service. Moreover, the non-mechanic-rated pilot can even do major repairs, provided he works under the *direct supervision* of a certificated airframe and powerplant (A & P) mechanic.

However, major repairs or major alterations must be approved for return to service by an "IA" (a certificated A & P granted "inspection authorization" by FAA) a repair station or manufacturer. Annual inspections must be performed by a certificated repair station or the manufacturer of the particular aircraft—or by an "IA."

The 4,069 IA's currently plying their trade play a key role in general aviation safety. Even though they are not FAA employees they provide an invaluable quality control over the work being done on the flight line, the hangar and in the shops.

INSPECTION Authorization was created by FAA 13 years ago to replace the DAMI—Designated Aircraft Maintenance Inspector. All who qualify and pass the required tests are authorized to carry the distinctive FAA card which proclaims their status.

Before a candidate can apply for the Inspection Authorization, he must have held both an airframe and powerplant rating for at least three years. In addition, he must have been actively engaged for at least two years before the application date in maintaining certificated aircraft. This provision bars military aviation mechanics, even though they may hold FAA A & P certificates, from qualifying for Inspection Authorization.

Owners can save money by removing fairing before inspector begins examination.

The holder of an Inspection Authorization must also have a fixed base of operations where he can be found in person or reached by phone during the normal working week. However, this fixed base need not be in the same place where he will exercise his inspection privileges. His authority is identical with the boundaries of the FAA General Aviation District Office in his area.

The inspector-candidate must have at his disposal (but not necessarily own) all the equipment, facilities and inspection data necessary to carry out thorough inspections of airframes, engines, propellers, landing gear, etc. He must take a comprehensive written test which probes his ability to carry out inspections according to FAA standards.

ONCE the authorization is awarded, it is renewed on March 31 of each year, provided the holder met certain FAA guidelines during the year. These include performing at least one annual inspection for each 90 days he has held the authorization, inspecting at least two major repairs or alterations during the same period, or performing or supervising and approving at least one progressive inspection done according to FAA standards.

The inspection authorization holder's fee for an annual inspection can vary from as little as $20 for a light single-engine plane to more than $100 for larger, more complex aircraft that require days to inspect.

ONE of the checkpoints in the annual inspection is the general appearance and cleanliness of the aircraft, inside and out. By handling this chore himself, the owner or pilot can save money.

The owner or pilot can also make simple fabric repairs not requiring rib stitching or the removal of structural parts or control surfaces. He can make small repairs to fairings, nonstructural cover plates, cowlings, and small patches and reinforcements—but such work must not change the surface contour so as to interfere with proper airflow.

The scope of the annual inspection is found in Appendix D of FAR 43. Instruments are inspected, for example, for general condition, mounting, marking and where practical, operation. A pilot who notes in his day-to-day flight operation that the markings on an instrument face have deteriorated, and promptly has them remarked, will save time and expense on his annual inspection.

Once the annual inspection has been signed off by the holder of an inspection authorization your aircraft is again officially airworthy, and you can take off with the lightness of heart that goes with confidence in the reliability of your machine. If you are somewhat lighter of pocket also, take comfort in knowing that the odds are now heavier in favor of your enjoying a safe year of flying ahead. ■

Checking torque values is part of annual inspection. Close tolerance limits are required.

The Best of Both Worlds

Flying floats adds to the exhilaration of flight, but calls for greater pilot responsibility.

Water rudders raised, floats riding on the step, Cessna 150 planes over lake ready for takeoff.

FOR the experienced pilot, converting from wheels to pontoons is about as easy as changing clothes, according to manufacturers of floatplane equipment. Conversion kits are available for several dozen aircraft types; obtaining a seaplane rating is only a matter of 8-10 hours of flight time. Just add water, and presto!—a whole new world of flying is open to you.

True enough, floatplane maneuvers present no real difficulties, and if you fly over watery terrain there are some obvious safety advantages over wheel-equipped aircraft if it comes to an emergency landing. Nevertheless, converting a landplane into a seaplane also imposes certain limitations and responsibilities on the pilot which may not be ignored without hazard. All pilots who are considering flying on floats should be familiar with the basic equipment and handling characteristics of seaplanes.

In the broad sense of the word, a seaplane is any aircraft designed to land and takeoff from water. There are three principal categories: floatplanes, hullplanes and amphibians. A *floatplane* is normally any land aircraft converted to water use by the installation of a pair of floats (or pontoons, as they are sometimes called) fixed approximately in the position of the main landing gear. The nose wheel or tail wheel is removed. One or two water rudders are mounted on the floats, with cable linking them to the flight rudder. An immovable fin is often added to the tail assembly to improve directional stability.

A *hullplane*, or flying boat, is an aircraft designed to land, takeoff and lie at rest on water. The hull usually is a single structure encompassing the entire fuselage, and strong enough to handle heavier seas than the floatplane can withstand. These are the largest form of seaplanes—the "Flying Clippers" of the pre-World War II period were in round-the-world service.

Lake Hood pilot dons boots to pre-flight floatplane. Individual bulkheads should be inspected for leaks by removing caps (visible on near float).

Amphibians are either floatplanes or hullplanes which have retractable wheels. The configuration is more common for hullplanes, since each float requires two wheels and a hand pump or an engine driven pump is required to actuate the landing gear. The weight increase may be as much as twice that of the non-amphibious float, and added expense may not be compensated for by the advantages of land-or-water capability.

Floatplanes Most Popular

Floatplanes are by far the most common of all seaplanes, with an estimated 2,500 in the United States alone, compared with about 500 hullplanes. Seaplane ratings, which are granted to certificated pilots who have demonstrated ability to handle the aircraft in flight and on the water, are held by about 42,000 pilots.

The use of floats as "landing gear" dates back at least as far as 1910. Credit for the first successful seaplane flight is usually given to Henri Fahre, a Frenchman who designed and flew a monoplane on floats in Paris on March 28, 1910. Floats have been fitted to almost all types of non-turbine aircraft and even some turboprop STOLS. For practical purposes, however, they are limited to single-engine and light twin aircraft not in the high performance category.

Virtually all floats now are made of sheet aluminum, although some plastic floats are being evaluated. Plastics offer some advantages—principally in design flexibility and resistance to corrosion—but they appear to be more vulnerable to damage and more difficult to repair.

Converting a landplane to floats always involves an addition of weight, with a consequent loss in performance and carrying capacity. To calculate the weight increase, you subtract the weight of the landing gear that will be removed from the total weight of the added floats, fin, struts, spreader and spreader wires if needed, cleats and other nautical hardware, bilge pump, paddle kit and water rudder(s).

The added weight can range from 200 to 1,000 lbs., depending on the aircraft. The floatplane will fly and climb a little slower, have a shorter range, and require a longer takeoff run than its land counterpart. It behooves the pilot, therefore, to know the exact capability of the floatplane he is flying, and not to expect it to perform "about the same" as the land version.

This admonition is especially important in view of the fact that float planes are often flown in remote areas, out of contact with air traffic control, under circumstances where assistance to a downed aircraft might be long in arriving. Furthermore, many of the lakes favored by floatplane pilots are located in high mountains, where in summer density altitude plays an important part in the loss of aircraft performance.

In such conditions, safety of all concerned depends heavily on the pilot's judg-

Smooth water and low-lying shoreline promise an easy takeoff. But look out for excess weight, especially on summer afternoons.

Many Long Island commuters now take advantage of convenient seaplane service from Port Washington to Wall Street.

ment and understanding. Where the land pilot is given the length of the runway exactly as so many feet, the floatplane pilot who has dropped in on an unfamiliar wilderness lake must make his own estimate as to the available "runway" in any given direction when he departs the area. He must also estimate accurately the height of trees, cliffs or other obstacles rimming the lake, and study the land configuration for signs of how winds in the area are affected by it.

This kind of information will probably not be available to him on the *Airman's Information Manual,* or in any other published form. He will be completely on his own, unless he is able to consult other pilots in the area—always a good idea for a pilot unfamiliar with the environment.

Some indication of the difference floats make in aircraft performance can be gained by comparing the takeoff run (over a 50-foot obstacle) required for a Cessna 150: 1,350 feet with wheels, 2,075 feet with EDO floats, according to EDO's latest published figures. The landing run, incidentally, is much shorter on water: 850 feet for the floatplane, compared with 1,075 feet for the wheel plane.

Body weight and excess baggage can be critical factors in taking off a floatplane from a mountain lake in summer. The temptation to stow on board quantities of fish or other trophies, in addition to sporting and camping gear, supplies, cameras, etc., must be watched carefully. They all add pounds to an aircraft whose margin of safety may be much smaller than the pilot is willing to recognize.

The actual length of takeoff run depends not only on gross weight and density altitude, but also on the expertise of the pilot. If he loses time in getting his aircraft up on the step, if he does not hold his attitude on the step properly while picking up speed, or if he tries to pull the aircraft into the air too soon he may easily exceed the normal takeoff distance.

Mark Off Runway

A safe practice is to mentally mark off a limit to the intended take off run which can be easily identified (such as a buoy, moored boat, pier or landmark abeam, etc.), and abort the takeoff if the aircraft is not airborne at this point. Taxiing over the intended takeoff area at a fixed rate of speed, in order to obtain a measurement of distance, is far more accurate than guessing. Distances on the surface of a body of water are difficult to judge, especially in bright sunlight.

The taxi run, at slow speed, will also give the pilot an opportunity to scrutinize the water for mooring lines, submerged trees or rocks, or other obstacles that he might not be able to see when his aircraft is frothing over the lake under full power. It will also give him a chance to experience wind and wave conditions. The snappy breeze in the middle of a lake may be nonexistent in the shadow of a high bluff or island—in which case he will break water later than he anticipated.

A successful takeoff under unfamiliar conditions can be insured by a careful preflight of the floatplane, which requires more time and trouble to check than a landplane. There is, of course, no dry land to walk around on, unless the aircraft is beached; when it is anchored in deep water, one may be tempted to skip some of the usual details. Nevertheless, safety requires the pilot to check every item on his list; a mechanical failure over water is no light matter—water is a surprisingly hard substance when struck at high speed.

The floatplane pilot must be especially careful to check for water in his fuel, since the watery environment frequented by floatplanes is conducive to the absorption of moisture. He must also check each of the six or more watertight compartments in each float—not simply by tapping them, but by unscrewing the cap and looking or feeling inside. Any seepage should be removed by bailing or pumping before takeoff.

Checking the control responses of the water rudders is an important step in the floatplane preflight. If they do not retract before takeoff, they will not only be damaged but will also increase the drag effect of the floats and lengthen the takeoff. Although the linkage is usually stainless steel it should be checked carefully for signs of corrosion or for blockage by weeds or other flotsam.

Flying floats is fun but it does add to the pilot's considerations for the safe operation of his aircraft. Just adding water to a ready-mix package may turn you into an instant chef, but it takes a few more ingredients to produce a proficient floatplane pilot.

(The standard reference on seaplane piloting, FAA Advisory Circular 61-21, "Flight Training Handbook," pp. 56-61, is sold by the Superintendent of Documents, U.S. Government Printing Office, Wash., D.C. 20402, for 70 cents. Also recommended is the booklet, "How to Fly Floats," by George Post, distributed free by the EDO Corp., 65 Marcus Drive, Melville, N.Y. 11746.)

Lewis Gelfan

On Long Island dock floatplane is launched much like a boat. The aircraft is wheeled down to water's edge on dolly controlled by steel cable on standing winch or truck. Preflighting, prior to engine start, is simpler on land.

CORROSION: THE ENEMY WITHIN

CORROSION is the common fate of all metals. Even an all-titanium aircraft (or one made entirely of gold, if that were possible) would not be entirely corrosion-free under all conditions. The familiar aluminum alloys of modern light aircraft are by no means immune to this destructive process in spite of the best planning and construction possible. The alert pilot or aircraft owner is well-advised to learn how to cope with this arch-enemy of metals.

What exactly is corrosion? Some people think of it as a mysterious demon that materializes out of thin air—and they are not far wrong. Expose a common metallic surface—iron, steel, aluminum, etc.—to ordinary atmospheric conditions and a chemical exchange between the two will soon take place. The general result is a coarsening of the smooth metallic surface and a gradual weakening of the tensile strength. Corrosion is "the slow destruction of a substance by chemical action at its surface" according to the *Harper Encyclopedia of Science*.

If you placed a drop of sulphuric acid on an iron plate, you would have a dramatic, if somewhat exaggerated, view of what happens whenever most metallic surfaces are exposed to air. Iron molecules at the surface would be altered by the acid into ferric sulphates and sulphides. When iron is exposed to air, a similar reaction produces ferric oxide, commonly known as rust.

Above left—Circled areas should be closely inspected during preflight. Corrosion can hide behind exhaust grime, in wheel areas, underside of fuselage and tail sufaces. **Above right**—heat and combustion products caused this corrosion. **Below**—examples of concentration cell corrosion.

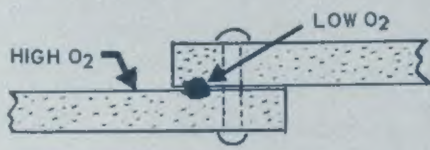


Figure 1

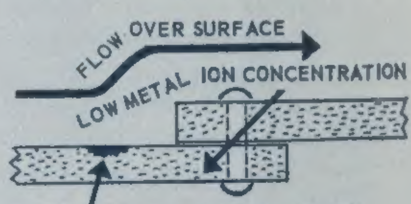


Figure 2

The telltale red signs of iron or steel rust are better known than the powdery gray-white rust of aluminium or magnesium alloys, but all of these metals usually require protective coatings to ward off corrosion. Aluminized lacquer and special enamels are used extensviely on aircraft surfaces. Titanium, nickel, and chromium are rust-resistant, but usually require preservative oils and compounds for supplementary protection.

The chief instigator of rust is that most common of elements always present in the air—oxygen. In the presence of oxygen, most metals are able to abandon their pure or alloyed state, to some degree, and return to nature—that is, to recombine with other elements. Metals are virtually never found pure in the earth. Refining them is a laborious process, and preserving them in their shining state is no easy task either.

For metals to react with oxygen, usually some moisture must be present. That is why the desert is the favorite storage area of idle aircraft. Sea air is the most hazardous environment for aircraft, not only because of the abundance of moisture, but also because of the salts dissolvd in it. Salts, such as sodium chloride (table salt) are the most villainous allies of the demon rust, since it is capable of speeding up the corrosion process enormously. That is why the friendly pat of a sweaty hand on a sleek metal surface, such as a propeller blade, can have unfriendly results—perhaps a pitted blade.

Wise pilots tend to handle the metal skin of their aircraft with "kid gloves." Even in the apparent absence of moisture, an injury to the metal, in the form of a severe twisting, stress, abrasion, or tearing, can set the stage for deterioration. There are also many forms of electrochemical corrosion, similar to the activity within a wet cell battery, which can cause more serious weakening of metal skin and internal structure than is possible from the effects of surface rust.

Types of Corrosion

• *Pitting* is a localized form of electrochemical corrosion which may take place whenever the protective coating of a metal has been pierced. This may be followed by an uneven oxidation of the exposed metal, in which case it is possible for a kind of galvanic cell to develop wherein adjacent areas of metal carry dissimilar electric charges, forming anodic and cathodic poles. As electrons flow between the poles, the anodic area disintegrates and the cathodic area becomes more heavily oxidized.

Pitting is a deep, penetrating attack which may be worsened by the entrapment of water beneath the surface. The attack must be halted by careful reduction of the pit by filing, grinding, stoning or lapping—all jobs for experts—before the protective

Aircraft operated near seacoasts are exposed to concentrations of salt-laden mists which can speed the onset of corrosion. Wash plane often with plenty of fresh water.

coating is restored.

• *Stress corrosion,* a product of mechanical stress, has two common forms: fatigue and fretting. In *fatigue,* microscopic intrusions and extrusions form during normal operation. These cracks may become the anode of a galvanic cell, leading to electrochemical corrosion as described previously. Adhesion of oxides or water on the walls of the fissure may prevent the metal from rewelding itself and a sizeable crack opens. Because of fatigue corrosion, metal parts may fail much earlier than their design limits.

• *Fretting* occurs when two metals rub against each other, wearing the surface of one or both. Oxidation starts, producing an oxide which is generally harder than either metal, which in turn accelerates the corrosion process.

• *Erosion/Corrosion* can be expected when metals are in an environment where some substance—air, liquid, mineral, etc.—passes over their surface, gradually destroying the protective layer. Localized corrosion occurs on the exposed metal. The area in back of exhaust pipes is a good example. Externally, the metal may appear solid, if somewhat discolored, but when placed under stress it gives way without warning.

• *De-zincification* is a corrosive process which may take place whenever acids come in contact with metal alloys containing zinc. Brass, a copper and zinc alloy, is typical. When exposed to a strong acid solution, such as hydrochloric acid, for a sufficient length of time, zinc ions in the alloy will go into solution and combine with the available chloride. Zinc will be stripped away, leaving a porous copper residue.

• *Concentration cell* corrosion is a type of rust that may take place in the area between riveted or bolted metal plates, where very litle air may enter. By comparison, the metal not covered by the overlapping plates has a high oxygen content. When oxygen is dissolved in moisture in the area and ionized, a current may flow between anodic and cathodic concentrations of ions, creating the familiar and destructive galvanic cell.

Keeping the aircraft clean is the best prevention from this kind of corrosion.

Micro-organisms are also capable of creating concentration cells and fostering corrosion in hidden areas of stagnation, where little or no light or air may enter. These can be minimized by design and fabrication which make it difficult or impossible for these organisms to accumulate, or which simplify detection and removal if they do.

• *Intergranular* corrosion is a localized "infection" of the grain boundaries of a metal, resulting in the loss of ductility and strength. All metals consist of an arrangement of many individual crystals (microscopically visible) which determine the mechanical properties of the metal. The grain boundaries, the area between adjoining crystals, provide a discontinuity within the metal structure. During heat treating or alloying, these boundaries may become more positively charged than the neighboring crystals. When a large enough potential difference exists, current flows and corrosion results.

• *General corrosion* is a catchall category used to describe the gradual overall deterioration of a surface at a uniform rate. "Dirty" aluminum is a good example. The factory-bright shine of a new airplane gradually fades as the wind and rain combine to create a mild corrosion. Aluminum oxide provides a tough outer coating, but it offers more resistance to the air than a smooth skin. Furthermore, important properties of the metal are weakened in the corrosive process, and the aircraft appears visibly aged.

Protective Care

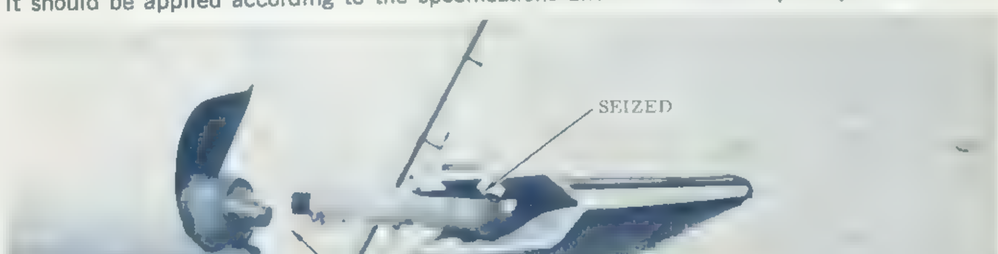
Airplanes, by the nature of their use, are inevitably exposed to all the elements of corrosion at one point or another. The increased contamination of the air, particularly over, and for considerable distances downwind of large cities, presents a relatively new but growing potential for aircraft corrosion. Aircraft frequently fly through belts of "smog" which exist for scores of miles, linking city to city, and many of these contain significant amounts of sulfuric acid and other corrosives.

A hangared airplane is usually a healthier airplane than one tied down outside, but the latter circumstance is obviously the more common one, and aircraft exposed to the elements will be frequently damp and dust-laden. What can the pilot or owner do to minimize corrosion?

Cleanliness is the best answer. Almost all dirt contains some potential electrolytes which will spur corrosion if allowed to collect on the surface of wings or fuselage. Mud on the propeller or wheel struts should be removed as soon as possible after a flight. Dirt not only speeds up corrosion, but it also hides evidence that pitting or cracking has occurred.

The lifespan of an airplane depends largely on its design and fabrication, of course, but also on the care and handling it receives to help ward off its environmental enemies. A hose, bucket, brushes, sponges and an assortment of solvents and rags might never qualify as conventional weapons, but in the battle against corrosion they can help you perform noble deeds. *Frank J. Clifford*

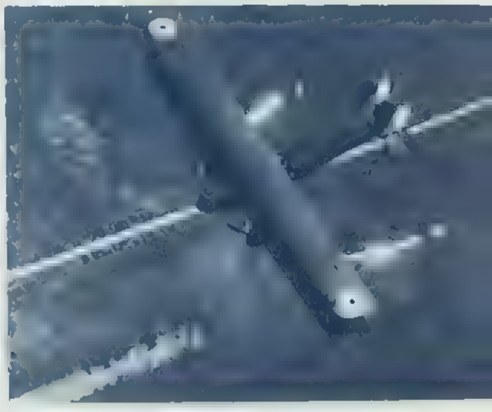
Corrosion, concealed under caked layer of grease caused this bearing to seize, preventing free movement of rudder trim tab control rod. Lubrication is necessary to all moving machinery but it should be applied according to the specifications and not allowed to pile up.



Famous

FLIGHTS

Sky High Irvin's Winning Dive



Above—Army Air Service parachute rigger using Irvin 'chute in demonstration leap in the '20s. **Above right**—Leslie L. Irvin, inventor of the practical free fall parachute. Army parachutists "pull-off" from Martin MB-1 bomber as part of parachute familiarization course.

When "Sky-Hi" Irvin dived out of the single-engine deHavilland biplane, his altitude was considerably more conservative than his nickname, yet the importance of this jump outweighed all the other spectacular leaps he had made in six years of barnstorming. Fifteen hundred feet below him was McCook Field, near Dayton, Ohio, where a small group of aviation professionals were watching him more intently than the gathering crowd. It was April 28, 1919, and Irvin was demonstrating his improved version of the back pack parachute which hopefully would make it possible for pilots to escape from crippled airplanes.

Although World War I was over, and flaming death in aerial combat had recently been relegated to novelists and motion picture directors, it was still very much in the minds of military aviators. At the close of the war, German pilots had begun to bail out of shot up aircraft by parachute, to the astonishment of Allied flyers. Although the English had been provided some parachutes, their use was considered too risky by most Allied pilots. They had good reasons.

Parachutes in use at that time often became tangled in damaged, gyrating aircraft. One tragedy that left an indelible and much talked-about impression with Allied flyers was the death of a young Frenchman after his chute snagged on his burning plane.

The parachutes in use were cumbersome, as well as hazardous, and obstructed a pilot's movement in the tiny fighter planes. This freedom of movement often provided the difference between survival and death in a tense dogfight.

Furthermore, many of the aces on the Western Front had preached the doctrine of sticking with a riddled plane, even if it burned.

One of the war's most famous pilots, Major Raoul Lufberry, who commanded the 94th Aero Squadron and introduced such fledglings as Eddie Rickenbacker to war in the air, told all his new pilots to sideslip if they were set afire by an enemy bullet.

"Just remember," he would tell them, "never panic and jump out. It means certain death. Ride your ship down . . . that way you'll have a fighting chance to fly again."

The terror which possessed men actually in the flames, however, often was irrepressible. Lufberry himself succumbed to it on May 19, 1918. During an attack on one of the new German "flying tanks" (heavily armored bombers bristling with machine guns) his engine burst into flames, and within seconds Major Lufberry had stepped off his wing and fallen to his death.

His fate prodded the U.S. Army Air Corps into action.

Almost all of the parachutes developed until 1919 used static lines for deployment. A rope or tape tied to the plane pulled the main parachute canopy out of the bag or can into which it was stuffed. At the end of the tethered fall—if all went well—the static line fastening broke loose to leave the chutist on his own.

The possibility of delaying the parachute opening until the pilot was well clear of the aircraft was appreciated, but there were many unknowns in the world of free-fall. Some very knowledgeable experts thought the psychic shock of falling through space would stun most men into inaction; they would either be unable to pull the ripcord, or they would pass out. Others said the force of the wind rushing by would flail a man to pieces, or at least knock the wind out of his lungs and prevent him from breathing.

On the momentous day in April 1919, when Irvin dived headfirst into space, there was no cord or tape connecting him with the deHavilland jump plane. His chute was neatly stowed in a close-fitting back pack. His hand firmly grasped a "D" ring attached to a steel cable, which ran around the back of the pack to a series of steel pins. These held the flaps of the back pack together. Inside the pack, attached to the top of the main parachute canopy, was a small parachute designed to be propelled from the pack by rubber bands. The small chute would then pull the main canopy surely and cleanly out of the opened pack.

Freefalling 500 feet, Irvin was in almost unexplored territory, but he was confident he could remain conscious, pull the ripcord, and make a comfortable landing in front of his friends and associates.

Irvin had made his first jump when he was 16, from a balloon. At Venice, Calif., in 1912, he had watched William H. Morton make one of the first intentional parachute jumps from an airplane. Under the name of "Sky-Hi," Leslie L. Irvin then became a crowd-pleaser at fairs and aviation meets across the country, where he parachuted from aircraft.

When the U.S. entered the war in 1917, Irvin worked by day for Curtiss in Buffalo, N.Y., and moonlighted on a pet parachute design. But it was not until the war ended that he was invited by the Army to demonstrate his chute at Dayton. . . .

Whistling through the 1,000-foot mark, Irvin pulled the "D" ring. Rubber bands snapped the pack open and spat out the pilot parachute. A cloth cloud of white silk—the main chute—flowed out of the

pack and inflated with explosive speed, dangling Irvin in the air. Below, the group of military observers cheered.

A bad landing put Irvin in the hospital with a broken ankle, but he was elated. The parachute was a success, and the Army placed an order for 300. On his recovery, Irvin went back to Buffalo, N.Y., and set up his parachute factory in an abandoned dance hall. This was the start of a business that would soon have nearly a dozen factories all over the world, and make Irvin a rich man. A simple clerical error in filing the incorporation papers turned Irvin's business into the Irving Air Chute Company. Not one to worry over unimportant details, Irvin left the final "g" where it was for a number of years.

The parachute that won an Army contract for Irvin was a flat chute, 28 feet in diameter wit ha 48 inch flexible vent. It had 40 shroud lines, arranged in 4 groups of 10 each, tied to a D ring sewn into the harness webbing, with a breaking strength of 3,400 lbs. A small pilot chute sprung the main canopy. Irvin and his partner, Floyd Smith, incorporated all of the best features of previous designs into their winning entry, which could be opened either by static line or rip cord.

For nearly 50 years, the chute Irvin demonstrated in 1919 remained as the standard service chute, with only minor modifications. The roster of early aviation greats who owed their life to the parachute includes such names as Charles Lindbergh, Jimmy Doolittle, and Amelia Earhart.

Some measure of the contribution to aviation safety made by Irvin, Smith, and those who went before him is found in the records of the Caterpillar Club—the informal organization of all those who have bailed out in an emergency. Until his death in 1966, Irvin presented each new member with a gold caterpillar pin. To date, upwards of 100,000 pilots and passengers, military and civilian, have jumped and lived to fly another day.

Donald J. Byers

Pilot James Ray, Sgt. Maj. Bottriell and Irvin before test jump that won for Irvin the Aerial League of America's Aerial Safety Trophy.

BRIEFS

• PILOTS FLYING TO MEXICO should be aware of recent changes in the regulation published last year (FAA Aviation News, May 1968). Mexican Government Circular TAI-FAL-1, May 6, 1969, provides that foreign civil aircraft of any type may enter Mexico without an advance written permit from the Direccion General de Aeronautica Civil, provided that they do not have more than 14 seats, carry only invited passengers traveling for pleasure, on private business, or in transit, and they are not piloted by a professional or hired, paid pilot.

If the aircraft owner is not on board, the pilot may sign form DGAC-40 at the entry airport stating under his responsibility that the flight is a private one—a notarized letter is no longer required.

Any rented aircraft larger than six seats or flown by a paid pilot, will require an advance permit. Additional information may be obtained from: Departmento de Transporte Aero Internacional, Direccion General de Aeronauticia Civil, Avenida Universidad y Xola, Mexico, D.F.

• ANOTHER STEP IN THE DIRECTION OF AVIATION SAFETY was taken June 1 when the New York Common IFR Room (CIFRR) put into operation a computerized alphanumeric radar subsystem which will provide controllers with automatic altitude reporting of all suitably equipped aircraft entering the New York area. Previously, altitude was reported by the pilot upon request from the controller. The altitude information will show up as an alphanumeric "tag" on the appropriate radar target, reporting the altitude in 100-foot increments, enabling the controller to monitor altitude changes as the aircraft under his control climbs or descends.

• TWO NEW FAA AVIATION FILMS, "Airports in Perspective" and "Stable and Safe" are now available for free loan for a week or less from the FAA Film Library, AC-921, P.O. Box 25082, Oklahoma City, Okla. 73125. "Stable and Safe" (FA-704) is a 17-minute color, sound, 16mm film describing an experimental stability augmentation system for light aircraft which helps the pilot keep control of his airplane when he inadvertently encounters IFR conditions. "Airports in Perspective" (FA-706) describes the dynamic growth of airports and some of the problems associated with growth. It discusses airport planning and its relation to urban development, transportation programs and land development around airports. Requests for films should be made at least two weeks before the anticipated showing date.

• "FORMING AND OPERATING A FLYING CLUB" is an Advisory Circular now available free from FAA General Aviation District Offices, or for 35 cents from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. AC-00-25 discusses various kinds of flying clubs, how to obtain equipment, regulations and by-laws, member recruitment, purchase and finance of aircraft, insurance, record keeping, and training programs.

CALL BEFORE YOU COME—Air traffic specialists in FAA Headquarters in Washington man the phones 24-hours-a-day, seven-days-a-week reserving landing and takeoff slots at the five high-density airports—Chicago's O'Hare, Washington National, JFK, LaGuardia and Newark—where flight restrictions went into effect June 1.

The airport reservation office (ARO) is tied in by teletype with FAA's 332 flight service stations where most pilots file flight plans. Pilots can request landing and takeoff reservations at high-density airports through the flight service station. However, FAA is encouraging use of special direct-dial phone lines, which will make it possible for pilots to call the appropriate ARO direct, for only 10 cents.

The numbers are: Newark area—201-645-4370; New York area—212-656-4177; Chicago area—312-372-5215; Washington area—202-963-5161.

FAA Seeks to Erase Precipitation Clutter from Airport Radar Scopes

Potentially dangerous precipitation clutter, which can "white out" the face of airport surveillance radar scopes, is being reduced at FAA's Jacksonville Air Traffic Control Tower by newly developed equipment now undergoing three-months' field evaluation there.

Known as Log-FTC-Antilog, the equipment can distinguish between a coherent signal, like that of an airplane, and the "noise-like" signal produced by a scattered or diffused target such as precipitation.

The device sorts the signals and incorporates only the coherent signals into the radar picture.

In its final version the equipment will be about as big as a table-top radio. It has been successfully evaluated at FAA's National Aviation Facilities Experimental Center (NAFEC) near Atlantic City.

The Log-FTC-Antilog process has been used in the past with non MTI (Moving Target Indicator) radar receivers to eliminate precipitation clutter but using it in conjunction with a moving target indicator is unique.

AIRBORNE ISOMETRICS—Two United Air Lines stewardesses show travellers how to relax and exercise travel-tense muscles right in their airborne seats. Pressing first one fist and then the second into the palm of the opposite hand will help relax weary shoulders; forcing knees against palms pressed to outside of legs will reduce fatigue in legs.

New Area Navigation Routes Considered Under FAA Proposal

As a step toward relieving congestion along the established air routes, FAA has proposed amending FAR Parts 71 and 75 to create "area navigation" routes.

(FAA AVIATION NEWS, July 1969 "From Checkpoints to Way Points" describes area navigation).

The proposed rule change would provide for publishing officially designated area navigation routes. To date, all are experimental and not available to the general public.

Concurrent with the notice of proposed rule making, FAA's Regional offices are developing enroute and terminal area navigation routes.

Comments on the proposed rule, "Designation of Area Navigation Routes," (Docket No. 9657, Notice 69-27) should be submitted by Aug. 18, 1969 to FAA Rules Docket, GC-24, 800 Independence Ave., S.W., Washington, D. C. 20590.

Flying Skill and Rating Courses Scheduled by Pilot Association

Private pilots who want to iron out any wrinkles in their technique, and those who want to add an instrument rating might find the answer to their ambitions through the Aircraft Owners and Pilots Association flight clinics which are held in various locations in the U.S. For details, write to AOPA, P.O. Box 5800, Wash., D.C. 20014.

Clinics for the remainder of the year will be held at: Worcester, Mass., Aug. 8-10; Denver, Colo., Aug. 15-17; Plantation Party, Atlantic City, N.J., Sept. 4-9; Concord (San Francisco), Calif., Sept. 19-21; Santa Monica, Calif., Sept. 26-28; Lincoln, Nebr., Oct. 3-5; Gaithersburg, Md., Oct. 10-12; Auburn University, Auburn, Ala., Oct. 17-19; San Diego, Calif., Oct. 31-Nov. 2; Ft. Lauderdale, Fla., Nov. 21-23.

More Frequent Electrocardiograms Proposed for ATR Rated Pilots

Air transport pilots would be required to take additional electrocardiographic examinations as a means of detecting possible heart disease at an early stage under a proposal now being considered by FAA.

Under the proposed changes to FAR Parts 121 and 127, a pilot applying for a first-class medical certificate would take a resting electrocardiographic examination (EKG) on his first medical examination, regardless of age, as well as on the first examination after his 35th birthday, and annually after his 40th birthday. Pilots holding first-class medical certificates who are less than 35 years of age would take his first resting EKG on their next medical examination.

Another section of the proposal would require all flight crew members acting as pilots under FAR Parts 121 or 127 to hold a first class medical certificate.

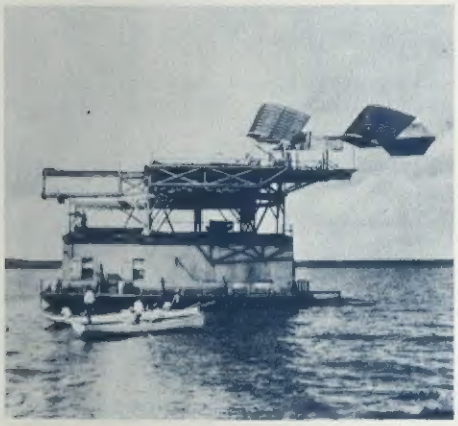
FORUM

• What Langley Didn't Know

In your article "Splashdown in the Potomac" (April, 1969) it is stated that "for reasons still unknown, it (Langley's Aerodrome) crashed and sank on takeoff." This is not so. The Wrights knew about center of pressure with respect to the aerodynamics of the wing surface. They learned why wings failed and had previously corrected that problem in their own experiments.

Langley may have studied aerodynamics but he did not succeed.

San Francisco



• "Chop" Talk

I would like to know the employment opportunities for helicopter pilots on the West Coast, particularly in the Los Angeles area.

Also, I would like to obtain information on the physical requirements, age limitations, and reputable schools in the Los Angeles area.

Ron Guess
Bellflower, Calif.

The answer to your first and last questions can best be obtained by writing or visiting FAA's Area Office, 5885 West Imperial Highway, Los Angeles, Calif. 90045. Here you will have an opportunity to talk to persons with first-hand information of the local scene.

A helicopter pilot flying for hire would have to pass a Class II FAA physical examination, details of which are also available at the Area Office.

As long as a pilot is able to pass the physical examination there is no upward age limit.

• OMNIs as Direction Finders?

Since a growing number of general aviation aircraft are equipped with omni navigation, why couldn't the omni receiver have incorporated in it a special circuit that would enable it to receive signals on 121.5 MHz, the emergency channel? This way, the omni could track the 121.5 MHz signal.

I believe this would greatly expand the number of planes available for search and rescue service.

As I understand it, the omni for all practical purposes is really a direction finder except for specified radials.

J. L. D.
Perris, Calif.

Emergency transmission on 121.5 MHz does not radiate course information as the omni station does, so it would not be possible for the omni circuits of the receiver to track these transmissions, even if the receiver was modified to receive 121.5 MHz. On the whole, it does not seem practical to use the omni equipment in airplanes for crash location.

At present, search for aircraft is accomplished with the use of the normal communications receiver carried by most aircraft. How this is done is described in Advisory Circular AC 91-19 "Emergency Beacons—Crash, Survival, Personal." (See "Bringing Them Back Alive", FAA Aviation News, June 1969 for additional information on the use of the standard aircraft receiver as a crash rescue device.)

• Instrument Rating Good for All

I have passed the flight instructor and instrument written test. If I get my instrument rating before I get my multi-engine rating, will it be valid in multi-engine aircraft later, or only in single-engine aircraft?

Nicholas J. Zunich, Jr.
Astoria, N.Y.

An instrument rating on a pilot certificate with an airplane category rating is applicable to either single- or multi-engine class ratings regardless of which class is used for the instrument rating flight test.

• Downtown Airport

How do I get permission to land a light plane on a city street as part of a civic celebration? I don't want to break any laws, but I would like to demonstrate the utility of a light plane as a means for coping with emergencies requiring rapid movement of medical equipment and personnel, etc.

Mt. Pleasant, Penn.

There is no Federal Aviation Regulation specifically prohibiting such a landing, but it might encroach on FAR 91 "General Operating and Flight Rules." Also to be considered is permission from the Pennsylvania Aviation Commission, the state police and, finally, the municipality directly involved.

For exact guidance in your specific case, visit the FAA General Aviation District Office at Allegheny County Airport, W. Mifflin, Pa.

• Turboprops and Prices

I would like to learn about turboprop lightplanes, both those in existence and those to come in the future. I am primarily interested in the 6 and 12-place planes and the lowest priced models.

Duane Fiorini
Livermore, Calif.

Increasing numbers of turboprop aircraft are appearing in the general aviation fleet, but they might not meet your definition of "light plane" and "low price."

Manufacturers of smaller turboprop aircraft include: Aero Commander Div., N. American Rockwell Corp., Bethany, Okla. 73008; Beech Aircraft Corp., Wichita, Kan. 67201; Cessna Aircraft Co., Wichita, Kan. 67201; The de-Haviland Aircraft of Canada, Ltd., Downview, Ontario, Canada; McKinnon Enterprises, Inc., Rt. 3, Box 690, Sandy, Ore. 97055; Mooney Corp., P.O. Box 72, Kerrville, Tex. 78028; Pacific Airmotive, 3000 N. Clybourn Ave., Burbank, Calif. 91502; Piper Aircraft Corp., Lock Haven, Pa. 17745; Riley Aeronautics Corp., P.O. Box 7067, Ft. Lauderdale, Fla. 33304; and Volpar, Inc., 16300 Stagg St., Van Nuys, Calif. 91406.

Prices range from $325,000 to $442,000 for the "standard" airplane, that is, without electronic navaids and special appointments.

FAA Aviation News welcomes comments from the aviation community. We will reserve this page for an exchange of views. No anonymous letters will be used, but names will be withheld on request.

• Cradle of Aviation

Kitty Hawk, N.C. is not the birthplace of aviation; Dayton, Ohio is. The airplane was born and built there and attempts were made to fly it there.

The Weather Bureau advised the Wrights that the only place where a downhill run into the wind could be found was at Kitty Hawk. Therefore, the plane was transported to Kitty Hawk and assembled.

The Wrights made the first flight, as you know, on December 17 and then returned to Dayton for the holidays. To say that Kitty Hawk was the "birthplace" of manned flight is an error. The bicycle shop in Dayton was the birthplace of manned power flight, so please let us keep the record straight.

J. H. Meyer, M.D.
Dayton, O.

• Jugged Hijackers

The April *FAA Aviation News* mentioned that 25 persons have been arrested in aircraft hijacking attempts. How many convictions have there been?

William L. Rutherford
Peoria Heights, Ill.

Twenty-nine persons have been arrested as of June 17, 1969, a number which includes six juveniles, four military personnel, and two men alleged to be conspirators.

There have been 12 convictions, including five juveniles and three military personnel. One man was declared incompetent to stand trial. As of June 17, 1969, there were 15 cases pending action.

• Winged Words

Congratulations on your use of the word "aerobatics" in the April *FAA Aviation News*. The choice of the word in the context of its use is excellent.

The dictionary definition of "aerobatic" is ". . . spectacular feats done in flying as loops, rolls, etc.," which is the sense in which you used it. "Acrobatics" is something a man or animal performs in the gym or on a trapeze.

"Aerobatic" has served its apprenticeship. It is used in the Irving Air Chute Co., Inc., catalog of 1930 and in most flying magazines.

Jack S. Minch
Absecon, N.J.

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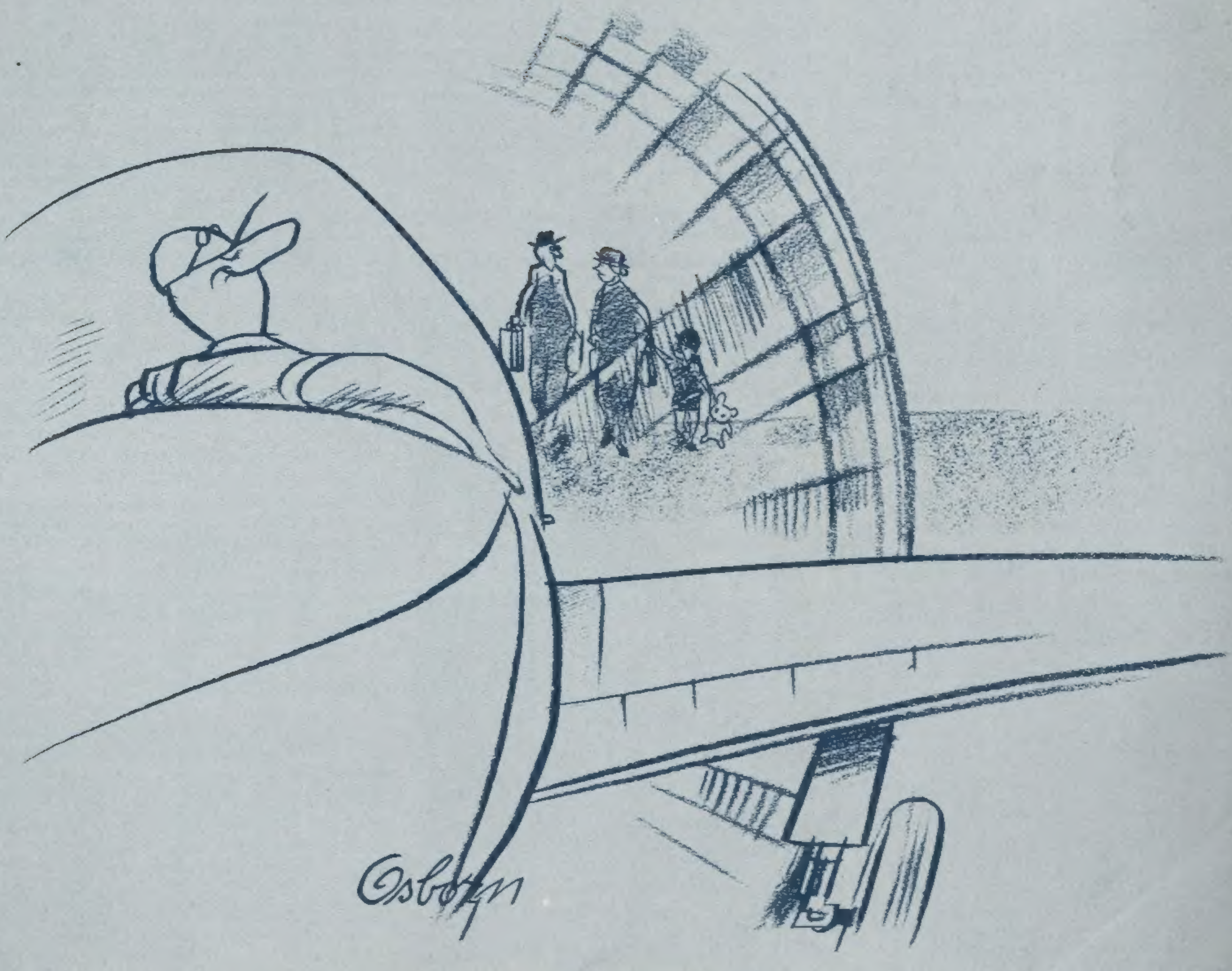

Stop engines dead

Suggested by W. M. Mayberry
El Dorado, Ark. FSS